(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: 0 547 966 A1

(12) EUROPEAN PATENT APPLICATION

(21) Application number: 92403423.4

(51) Int. Cl.[5]: B65D 33/25, B65D 33/34

(22) Date of filing: 16.12.92

(30) Priority: 17.12.91 US 808739

(43) Date of publication of application:
23.06.93 Bulletin 93/25

(84) Designated Contracting States:
BE CH DE DK ES FR GB IE IT LI NL PT

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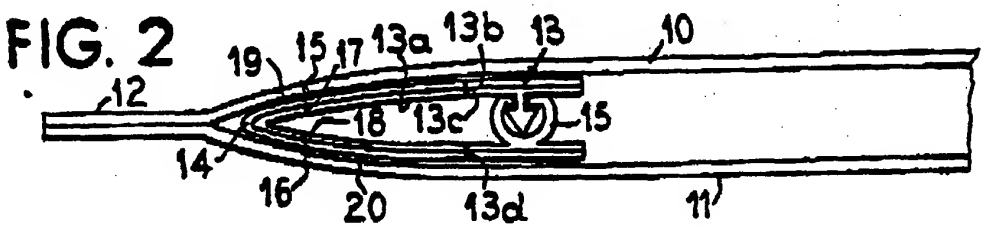
(54) Tamper-evident zipper closed package.

(57) A plastic film container having a tamper-evident feature wherein a bag is provided having first and second opposing film walls (10,11) with a doubled zipper strip (13) between the film walls (10,11) at the bag top, the outer film layers (10,11) of the bag being sealed in a fin seal (12) above the zipper strip (13). Perforation lines (15,16,17,18) extend in alignment through the zipper strip (13) and the outer film layers (10,11) of the bag; sealing strips (19,20) are provided between the doubled zipper strip (13) and the layers of the bag (10,11) to block the perforations in the bag (15,16) and zipper strip (17,18). The zipper strip (13) is sealed to the film layer (10,11) so that as the top is torn off the bag, a portion of the doubled zipper strip (13) will be removed but the remaining sides of the zipper strip (13) will be attached to the bag film walls (10,11) to provide a reclosable bag.

FIG. 2



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BACKGROUND OF THE INVENTION

The present invention relates to improvements in plastic bags and fasteners therefor, particularly to a reclosable plastic film bag which is hermetically or non-hermetically sealed and has tamper-evident features to show whether the bag has been previously opened.

More particularly, the invention relates to improvements in reclosable plastic bags which have reclosable rib and groove profile elements which permit the bag to be opened and reclosed. Where the bags are used for containing products such as foodstuffs, flaps above the rib and groove elements have been joined to hermetically seal the bag until such time when it is purchased and opened for use. To facilitate opening, tear perforations have been placed at the top above the rib and groove elements so that a strip can be torn from the top to free the flaps and permit opening the bag by pulling the rib and groove elements apart. The addition of perforations allowing the tearing of a strip off the top has been known in U.S. patents such as 3,9172,443, 3,226,787, 3,473,589, 4,589,145 and 4,846,585.

Such perforations destroy the hermetic seal of the bag and permit the passage of air. While the rib and groove elements below the perforations may be joined to close and seal the bag, these elements may inadvertently become separated during handling, storage and merchandising so that air can enter the bag via the perforation holes. Further, the rib and groove elements per se may not be sufficiently airtight. The need for airtight integrity is especially present where the contents of the bag must be protected against air, such as where the bag contains foodstuffs, and laminated films have been used for this purpose. The addition of such perforations creates a problem because the rib and groove elements below the perforations may not be sufficiently airtight, although they present the best method of tearing off the top of the bag for access to the rib and groove elements without having to use shearing instruments for cutting off the top. Such perforations can be added by simple perforation equipment which operates rapidly and satisfactorily. Other forms of weakened lines of tear resistance may be employed but perforations provide the easiest tearing means particularly in plastic film bags.

Another feature of bags formed by thin plastic film of the type which have been previously available is that the film has been made as thin as possible for cost saving and often the film lacks sufficient body to adequately provide an easily graspable flange arrangement at the top for opening the bag. Also, if the film is too light, insufficient support for the rib and groove elements is provided.

FEATURES OF THE INVENTION

An object of the invention is to provide an improved bag structure and method of making utilizing thin plastic film wherein the bag has the features of being hermetically sealed until first used and yet is reclosable by having pressure interlocking rib and groove elements, wherein disadvantages of prior art bags are avoided.

A further object of the present invention is to provide an improved hermetically sealed plastic film bag having a reclosable zipper at the top utilizing an improved cap seal arrangement for sealing tear perforations at the bag top.

A further object of the invention is to provide for improvements in plastic film bag structures wherein the bags can be rapidly made in duplicate arrangement and wherein the pressure reclosable rib and groove elements are carried on a separate strip which contributes even further to the functionality of the bag.

In providing a container of plastic film, in accordance with the invention, opposed film walls are attached at their edges and are attached in a fin seal at the top. A doubled zipper strip is placed immediately adjacent the fin seal with the zipper strip having pressure reclosable rib and groove elements at its lower edge. Perforations extend through the outer walls of the bag as well as through the doubled zipper strip within the top. A cap seal is sandwiched between the zipper strip and the outer layers and the zipper strip and each outer layer are heat laminated to each other.

When the top is torn off the bag, the cap strip tears along the perforations having provided an air and moisture seal at the perforations until the strip is removed. The sides of the zipper strip remain laminated to the bag top providing stiffness and providing very good pull flanges for pulling apart the zipper profiles. The structure provided may take the form of different variations using the principles of the invention. The combination of the features of the structure adapt themselves to rapid manufacture of double bags and to remedying defects and providing advantages not present in bags heretofore available.

Other objects, advantages and features will become more apparent with the teaching of the principles of the invention in connection with the disclosure of the preferred embodiments thereof in the specification, claims and drawings, in which:

DESCRIPTION OF THE DRAWINGS

FIG. 1 is an elevational view taken edge-wise of an assembled plastic film arrangement prior to being formed into a bag, constructed in accordance with the principles of the present invention;

FIG. 2 illustrates in section the top end of a bag

after being assembled from a film structure similar to that of Fig. 1, although the film structure differs in certain aspects;

FIG. 3 Is an nlarged plan view illustrating an improved perforation arrangement which may be employed for accommodating the removal of a tear strip from the top of a bag;

FIG. 4 is a sectional view taken through a double zipper having one structure formed In accordance with the present Invention;

FIG. 5 Is a view similar to Fig. 4 but showing a modified form of double bag structure;

FIG. 6 is an elevational view taken end-wise of a film structure arrangement for forming into a bag;

FIG. 7 Is a sectional view taken through the top of a bag formed from a structure such as that of Fig. 6;

FIG. 8 Is an end elevational view of a zipper strip arrangement;

FIG. 9 is a sectional view of the top end of a bag formed utilizing the zipper strip arrangement of Fig. 8;

FIG. 10 Is an end elevational view of a zipper strip of modified structure;

FIG. 11 Is an end elevational view of the zipper strip of Fig. 10 illustrating the flattening of the ribs when pressure is applied;

FIG. 12 Is a sectional view of layers of film at the top of a bag; and

FIG. 13 Is a plan view of the arrangement of Fig. 12.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Fig. 2 illustrates the top of a bag formed of an upper thin film bag layer 10 and a lower thin film bag layer 11. These layers are joined at the top 12 In a fin seal.

Below the fin seal and between the bag layers is a zipper strip 13. The zipper strip may be formed of separate strips but is shown as formed of a doubled strip being, folded at 14 with mating pressure interlocking profiles 15 such as rib and groove elements between the lower edges of the doubled zipper atrip 13.

The zipper strip is shown as multilayered having an inner layer 13a which carries the zipper profiles 15 and a outer layer 13b.

The film bag layers have perforation lines 15 and 16 in the upper and lower layer for first tearing off the top of the bag when the bag is to be used. Corresponding lines of perforations in similar oriented locations are formed at 17 and 18 in the zipper strip essentially in alignment with the lines of perforations on the bag so that the doubled edge 14 of the zipper strip is torn off at the top of the bag when the bag is first us d.

To block the perforations and prevent the entry of air or moisture prior to the bag being used, there is a cap strip provided between the layers of the bag and th layers of the zipper strip with a cap strip shown at 19 between the zipper strip and the upper bag layer 10 and a cap strip 20 positioned between the lower bag layer 11 and the zipper atrip. This cap layer is of thin material which will automatically tear when the top Is torn off on the bag but Impervioua to air and moisture so that It blocks the perforations.

In the formation of this bag, the layers of the bag film will be surface sealed to the zipper strip 13 thus making a multilayered lamination.

Therefore, when the top is torn off of the bag, there will be flanges above the profiles 15 which will have substantial bulk. These flanges will provide readily available and stiff pull flanges for pulling the zipper profiles apart when the bag is to be opened and the bag will again be reclosed.

Fig. 1 Illuatrates the assembly of the zipper strip as it may be prepared. The layers 13a and 13b of the zipper strip can be laminated to each other and the cap strips 19 and 20 laminated over the rows of perforations 18 and 19. The zipper strip Is then folded to be doubled at 14, Fig. 2 and placed between the bag layers before the fin seal 12 is made. Actually, the fin seal is made by the application of heat and the zipper strip can be bonded In place at the top of the bag by application of heat to the outer surface of the upper and lower film layers 10 and 11.

For facilitating this bonding and to prevent any distortion or damage to the profiles 15, it is desirable that only sufficient heat be applied to cause a lamination of the outer layers of the zipper strip to the layers of the bag. A preferred arrangement to permitting high speed manufacturing operation without concern as to damaging the profiles is to manufacture the inner layer of the zipper strip of a higher melt temperature plastic than the outer layer. For example, the outer layer 13b may be of the same or similar melt temperature as the outer layers 10 and 11 of the bag. The inner layer 13a of the zipper strip may have a higher melt temperature so that It does not distort or tend to melt with the application of heat which bonds the zipper strip to the bag film. Also, the profiles 15 may be formed of the higher melt temperature plastic so that they resist any distortion due to being heated.

Another arrangement which may be employed to protect the profiles is to make the lower edge of the zipper strips of a higher temperature plastic. For example, aa shown at 13c and 13d, the plastic of the zipper strip below those lines 13c and 13d may be made in its entirety of a higher melt temperature piastic. The zipper strip plastic above lines 13c and 13d will be of the lower melt temperature plastic so that they will bond readily to the film layers 10 and 11 of the bag and will effectively sandwich the cap strips 19 and 20 therebetwe n. The cap strips may be formed also of

e thin plastic of the same melt temperature as the bag film and the zipper strip r the cap strips may of a higher or l w r melt temperature inasmuch as they are ffectively sandwiched between th layers to provide a berrier preventing the entry of air and moisture through the perforation openings.

The perforation openings such as shown at 15 and 17 in the facing leyers of the beg and the zipper strip are In alignment for ease of tearing. Similarly, the perforations at the other side of the beg, that is, at 16 and 18 are also In alignment. However, in rapid menufacturing operation, sometimes the perforations are not exactly oriented. For this purpose, an arrangement such es Fig. 3 Is employed which insures ease of tearing. The illustration of Fig. 3 shows juxtaposed layers such as that of the outer film layer of the bag and the next adjacent layer of the zipper strip. The zipper strip, for example, will have perforations 24 and the bag will have perforations 25, with the assembled layers shown generally at 23. The perforations in one of the layers, such as the perforations 24, will comprise lines extending straight along the perforation line. The perforation lines 25 and the other leyer will extend diegonally so that with any misalignment, there will still be an overlap of the perforation. The cap strip will be sufficiently broad to block any passage of air through these perforations so that this arrangement of Fig. 3 will not impair the functionality of the structure.

Figs. 4 and 5 illustrate e method and structure for simultaneously meking multiple begs.

In Fig. 4 dual zippers are shown being made utilizing an upper layer of film 26 and placing It over the top of a lower layer of film 27. Between these layers of film are doubled layers of zipper strip with the upper strip layer shown at 29 and the lower zipper strip layer at 30.

At a center line 28, the layers are joined to each other so that they will form a fln seal at the top of the bag.

The zipper strips contain double profiles which are spaced outwardly of the center line 28 of the joined assembly with the interlocking profiles at one side for one of the begs shown at 31 end the interlocking profiles at the other side for the other of the bags shown at 32.

Perforations extend through the layers and as shown at 33, the aligned perforations will extend though both layers 26 end 29. In alignment with these perforations In the lower layers will be e line of perforations 34 which extend through layers 30 and 27.

At the other side of the center line 28, will be rows of aligned perforations. Perforations at 35 will extend through leyers 26 and 29. In the lower leyers, perforetion lines 36 will extend through layers 30 and 27.

Cap strips 37 and 39 will be placed over the upper layers to block the rows of perforations 33 and 35.

Lower cap strips 38 and 40 will b placed over the lower rows of the p rforations 34 end 36 to block and seal these p rf rati ns.

The upper lay r 26 will be laminated r co-extruded with the layer 29 of th zipper strip. Similarly, th lower film layer 27 will be laminated to or co-extruded with lower zipper layer 30.

In the structure of Fig. 5, an upper bag film layer is shown et 41 and a lower beg film leyer is shown at 42. Sandwiched between these layers is the upper layer 43 of the zipper film and a lower leyer 44 of the zipper film. The layers of zipper film have profiles 44a and 44b therebetween spaced outwardly from a center line 49. At the center line, adequate heat is applied to form e fln seal end join all of the layers in a laminated fashion. By the application of heet over the entire upper surface of the bag film 41 and over the entire lower surface of the bag film 42, the outer layers of the zipper film are laminated thereto. That is, the outer portion of the upper zipper film is shown at 43a being of a lower melt temperature than the inner layer 43b. Similarly, with the lower layer, the layer 45a which faces the bag film layer 42 is of a lower melt temperature than the inner layer 45b. When the lamination has been completed, the beg assembly is severed along the center line 49 to form two separate bags.

Figs. 6 and 7 illustrate structures which are used to form e bag top wherein Instead of providing a separate cap strip, a multiple layered zippered strip is employed end the outer layer of the zipper strip functions es a cap strip to provide a barrier seal for the perforations.

Fig. 7 Illustrates the top end of the bag with an upper film leyer 58 and a lower film layer 59. Sandwiched between the layers at the upper end of the bag is a doubled zipper strip 56. This zipper strip is shown in its assembled fashion in Fig. 6 heving an inner layer 56a with rows of separations 57 therealong. The outer leyer 54 of the zipper strip is imperforate. The zipper strip has interlocking profiles 55 et its edges.

When the zipper strip is doubled as shown in Fig. 7, it is laminated in place between the layers 58 and 59 of the bag. These layers have rows of perforations 58a and 59a which are blocked by the layer 54 of the zipper strip. The inner leyer of the zipper strip has rows of separations which are aligned with the rows of perforations in the film.

In the arrangement shown in Figs. 8 and 9, only outer layers of the bag film are perforated and the zipper strip forms the cap strip function of blocking air passage through the rows of perforations.

In Fig. 9 an upper bag film layer 63 is laid over a lower bag film layer 64 and the two layers are joined et e fin seel 65. The upper layer hes a row of perforations 66 and the lower layer has a row of perforations 67. Between the bag layers is a doubled zipper strip shown in detail in Fig. 8. This zipper strip 60 has interlocking profil s 61 et its edge end rows of ribs 62

extend parallel to the strip. When the zipper strip is folded and placed within the top of the bag as shown in Fig. 9, the parallel rows of ribs provide a tear guide means to insure that when the top is torn off the bag, that the tear will be even and parallel to the bag top. Furthermore, the ribs provide bulk and stability for pull flanges when the bag is to be used after the top tear strip is removed.

One further arrangement of providing bulk and stiffness to the top of the pull flanges is in the arrangement shown in Figs. 10 and 11. In Fig. 10 a zipper strip 68 is provided with interlocking rib and groove profiles 69 at the edges. Extending along the surface of the zipper strip are rows of ribs 70 which are in the form of small hollow tubes. These hollow tubes, as shown in Fig. 11, flatten when pressure is applied to the outer surface of the strip such as when the bag side seals are formed but the ribs provide improved gripping surfaces and bulk for pull flanges when the zipper strip is laminated within the top of a bag.

A still further way of providing for stiffness to the pull flanges and for the top of the bag is illustrated in Fig. 12. In Fig. 12 the top of a bag is shown formed between an upper film layer 71 and a lower film layer 72. The upper film layer has a row of perforations at 76 and the lower film layer has a row of perforations at 77.

Laminated to the inner surface of the upper layer at the bag top is a cap strip 73. This cap strip has a thickened portion along at least one side. A thinner portion 73c is placed over the row of perforations 76 and functions adequately to block the row against air penetration. Yet, at the edges of the cap strip, are thickened portions 73a and 73b which provide rigidity for the bag top. For the lower layer, a zipper strip 75 is provided having a thinner portion 75c at the center with thicker portions 75a and 75b at the edges. While these strips are referred to as zipper strips, they can be employed with profiles or used and constructed without profiles as illustrated performing their functions as cap strips and stiffeners for the bag. The thickened portions are offset to match thinner portions in location. The perforations are thus offset and in some constructions, it may be desirable to align the perforations and the thinner portions.

Fig. 13 illustrates the upper film layer of the bag 71 in plan view with perforations at 76 and the lower film layer 75 below it with its line of perforations 77. The cap strips are sandwiched between the film layers and provide stiffness and rigidity for the film.

Thus, it will be seen that we have provided an improved bag top structure and method of making plastic film bags which meets the objectives and advantages above set forth and accomplishes flexibility of purpose and attains achievements not heretofore possible.

Claims

1. A plastic film container having a reclosable top closure comprising in combination:
   a plastic film bag having first and second opposing film walls extending to a bag top;
   zipper means with reclosable pressure interlocking rib and groove profiles positioned between the opposing film walls at the bag top;
   means defining a weakened perforate tear line in at least one of said opposing film walls;
   and cap seal means on the surface of the film sealing the perforation tear line.

2. A plastic film container having a reclosable top closure constructed in accordance with claim 1:
   wherein the zipper means also is provided with a tear line of weakened tear resistance.

3. A plastic film container having a reclosable top closure constructed in accordance with claim 2:
   wherein the lines of weakened tear resistance in the film and the zipper means are in alignment.

4. A plastic film container having a reclosable top closure constructed in accordance with claim 1:
   wherein said cap means is positioned to provide a barrier for the tear line of the film and of the zipper means.

5. A plastic film container having a reclosable top closure constructed in accordance with claim 1:
   wherein the profiles are formed of a higher temperature plastic than the film so that a joining heat seal can be formed between the layers of the film of the bag walls and the zipper means without damaging the profiles.

6. A plastic film container having a reclosable top closure constructed in accordance with claim 5:
   wherein the profiles are mounted on a layer of plastic film having a higher melt temperature than the film of the bag walls.

7. A plastic film container having a reclosable top closure constructed in accordance with claim 1:
   and including means joining in surface to surface relationship the zipper means and the bag film walls.

8. A plastic film container having a reclosable top closure constructed in accordance with claim 1:
   wherein the zipper means is formed with said first and second layers joined by doubling the film at the top of the bag.

9. A plastic film container having a reclosable top

closure constructed in accordance with claim 1:

including a first cap seal means between said first bag wall and the zipper and a second cap seal means between the second bag wall and said first and second cap seal means joining the bag walls to the zipper means.

10. A plastic film container having a reclosable top closure constructed in accordance with claim 1:

wherein said zipper means has first and second layers each being multilayered.

11. A plastic film container having a reclosable top closure constructed in accordance with claim 1:

wherein said zipper means has a double layer with an inner layer having a higher melt temperature so as to be unaffected by the application of heat for joining the film walls to the zipper means.

12. A plastic film container having a reclosable top closure constructed in accordance with claim 1:

wherein the film walls are sealed to each other at the bag top forming a fin seal and said zipper means is located inwardly of said fin seal.

13. A plastic film container comprising in combination:

a plastic film bag having first and second opposing film walls extending to a bag top;

means joining the film walls in a fin seal at the bag top;

a line of perforations extending across the bag top;

and a perforation cap seal strip sealed over the film walls at the perforations;

said cap strip being thicker at one area than at the perforations so that the strip and the bag film will separate at the perforations and provide bulk adjacent the perforations.

14. A plastic film container constructed in accordance with claim 13:

wherein said cap strip is thicker at both sides of the perforations than at the perforations for providing stiffness and providing a thickened part remaining with the bag when it is torn along the perforations.

15. A plastic film container constructed in accordance with claim 13:

wherein the thicker area is inwardly of the perforations relative to the bag top so that the thicker portion remains with the bag when the top of the bag is torn off along the line of perforations.

16. A plastic film container having a reclosable top closure constructed in accordance with claim 1:

including ribs on the zipper means extending parallel to the weakened tear line so that the film will be guided in tearing along the weakened tear line.

17. A plastic film container having a reclosable top closure constructed in accordance with claim 1:

including guide means on the surface of the zipper means extending parallel to the perforate tear line to guide the tear as the top is removed from the bag by tearing along said line.

18. A plastic film container having a reclosable top closure constructed in accordance with claim 1:

including plural hollow ribs flattenable with a pressure against the film extending on the surface of the zipper means parallel to the tear lines.

19. A plastic film container having a reclosable top closure constructed in accordance with claim 1:

including evenly spaced ribs extending along on an inner surface of the film of the zipper means parallel to the tear line.

20. A plastic film container having a top closure comprising in combination:

a plastic film bag having first and second opposing bag walls extending to a bag top;

means joining the layers of film in a fin seal at the bag top to close the bag;

an inner layer of film within the bag walls at the bag top;

a first line of perforations in the bag film extending across the bag top for removal of the top;

and a second line of perforations formed in said inner layer;

said first and second lines extending substantially coextensively so that both lines can be torn simultaneously;

the perforation of one of said lines extending parallel to the line;

the perforation of the other line being elongate and extending at an angle for aiding in tearing in the event the lines inadvertently are not in perfect alignment.

21. A plastic film container constructed in accordance with claim 20:

including a multiple inner layer with each inner layer having a line of perforations extending substantially coextensive with each other.

22. A plastic film container constructed in accordance with claim 20:

including two double inner layers with pressure interlocking shaped profiles between

the inner layers to form a reclosable bag after removal of th top by tearing al ng th lines of p r-foration.

23. The method of making double bags having a pilfer-evident feature including the steps:
providing a first outer layer of bag film;
positioning a second outer layer of bag film beneath the first layer;
positioning first and second juxtaposed inner zipper layers along a lateral center line between the bag layers with the inner layers having first and second complementary rib and groove interlocking joining zipper profile sets extending laterally, said first and second sets spaced from the center line joining all layers;
forming first lateral rows of perforations through the first layers with one of the first rows being on one side of the center line and the other of the first rows on the other side of the center line;
forming second lateral rows of perforations through the second layers aligned with the first rows of perforations;
and placing perforation blocking strips in alignment with the perforations for each of the rows.

24. The method of making double bags having a pilfer-evident feature in accordance with the steps of cleim 23:
wherein the perforation blocking strips are placed between the bag layers and zipper layers.

25. The method of making double bags having a pilfer-evident feature in accordance with the steps of cleim 23:
including separating the bags by cutting them along said center line.

26. A double container structure comprising in combination:
a first outer layer of bag film;
a second outer layer of bag film beneath the first layer;
first and second inner zipper layers juxtaposed between the bag layers with the inner zipper layers having complementary rib and groove interlocking joining profiles therebetween spaced laterally of a center line;
all of said layers joined to each other along said center line;
spaced first rows of aligned perforation through the first leyers at opposite sides of the center line;
and perforations through the second layers in alignment with th first perforations.

27. A double container structure constructed in accordance with claim 26:
and including a severance cutting line extending along said center lin .

28. A double container structure constructed in accordance with claim 26:
including a perforation sealing cap strip positioned between the zipper layers end the bag film layers.

29. A plastic film container having a reclosable top closure comprising in combinetion:
a plastic film bag having first end second opposing film walls extending to a bag top;
a plastic film zipper member having first and second layers respectively lying in juxtaposed relationship with said first and second film walls at the bag top;
reclosable pressure interlocking rib and groove profiles between the layers of the zipper member;
and tearable lines of weakened tear resistance in said bag film walls and in said zipper with the lines in the zipper layers oriented with the lines in the film for tearing the top from the bag.

30. A plastic film container having a reclosable top closure constructed in accordance with claim 29:
wherein said lines of weakened tear resistance are in the form of perforations extending through the film of the bag walls and the zipper member.

31. A plastic film contalner having a reclosable top closure constructed in eccordance with claim 29:
including a perforation blocking cap means between the zipper member and the bag film walls preventing air leakage through the perforations.

32. A plastic film container having a reclosable top closure constructed in accordance with claim 29:
including a perforation blocking cap means located in alignment with said lines of weakened tear resistance and preventing the penetration of air through the tear resistance lines into the bag.

33. The method of making a plastic film container having a reclosable top closure in accordance with the steps:
placing opposed plastic film layers in opposing relationship to provide bag walls extending to a bag top;
positioning zipper means with reclosable pressure interlocking rib and groove profiles between the opp sing film walls at the bag top;

providing a weakened p rforate tear lin xtending laterally across the bag in at least one of the film walls;

and providing cap seal m ans on the film sealing the perforation tear line.

FIG. 1

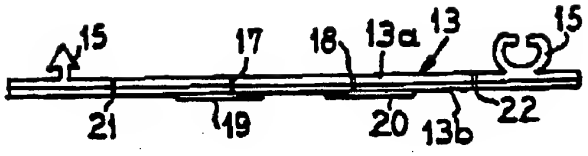


FIG. 2

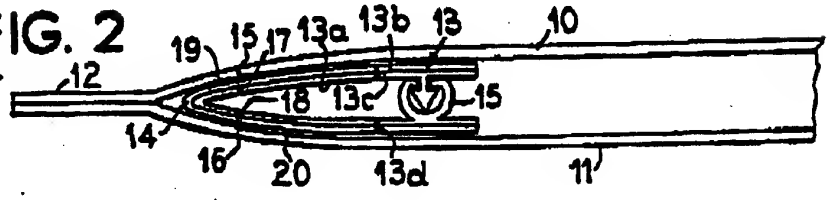


FIG. 3

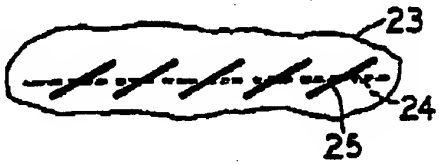


FIG. 4

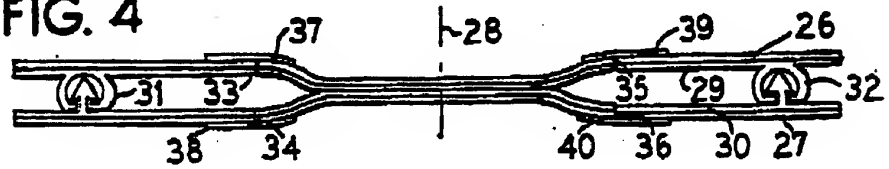


FIG. 5

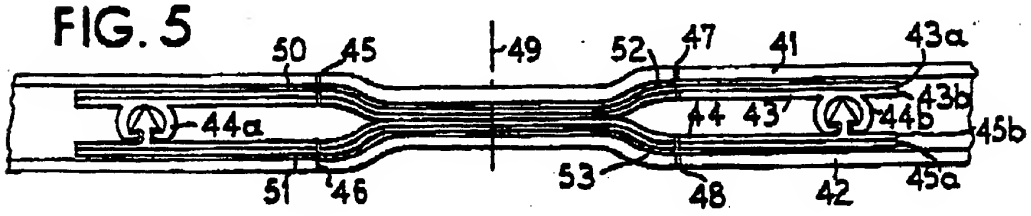


FIG. 6

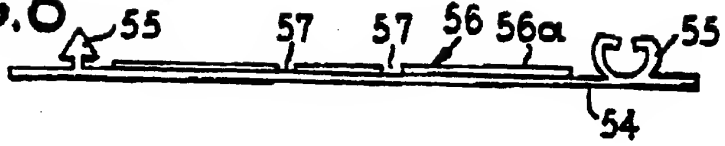


FIG. 7

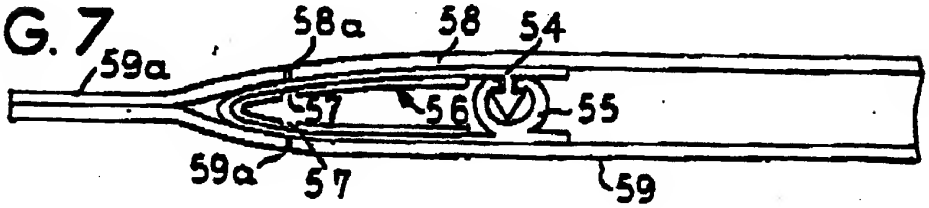


FIG. 8

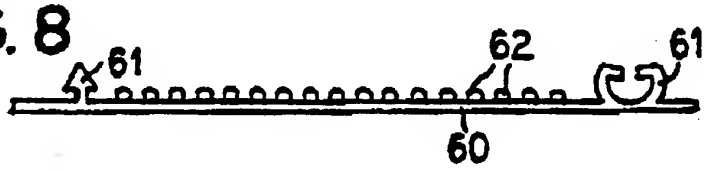


FIG. 9

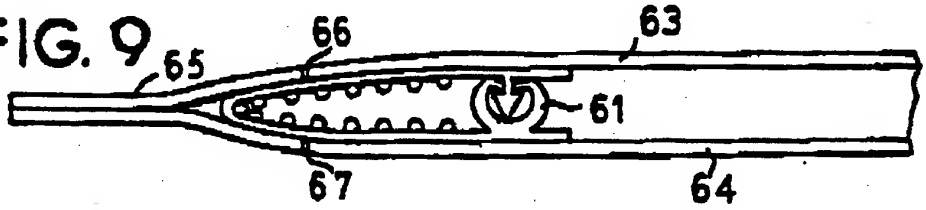


FIG. 10

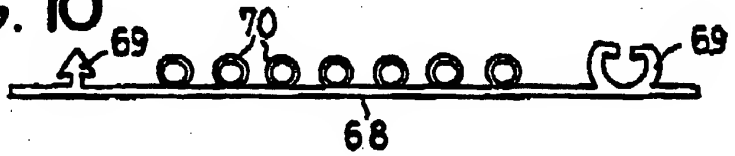


FIG. 11

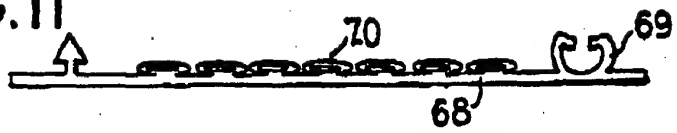


FIG. 12

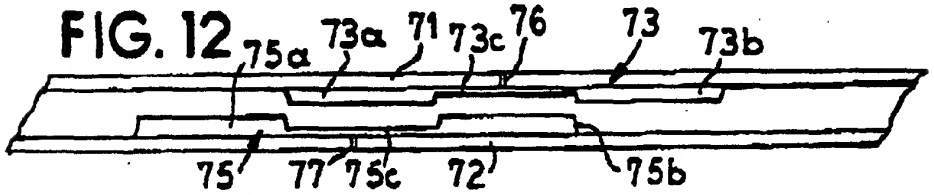
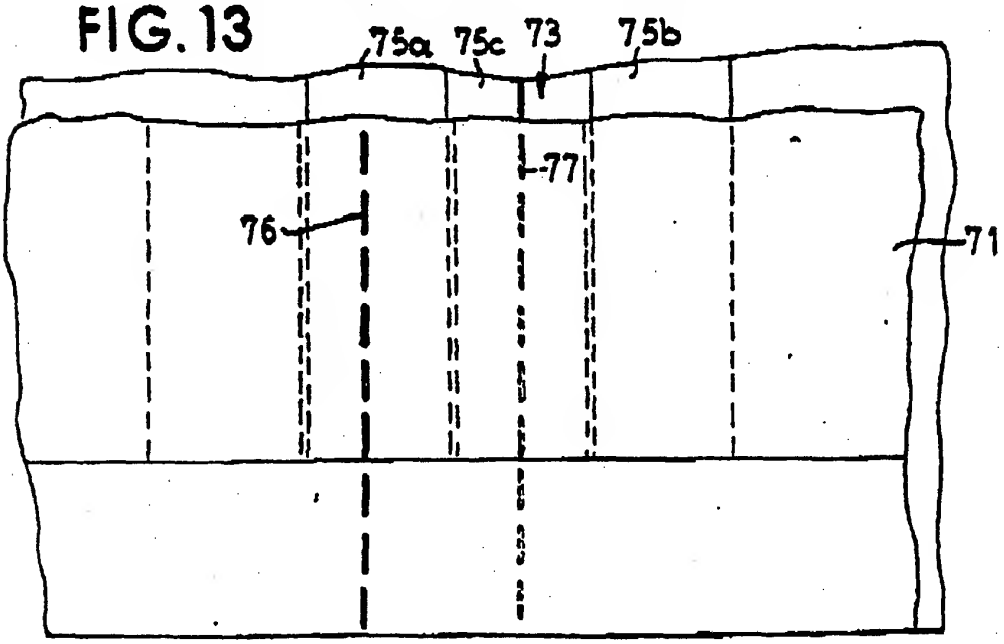


FIG. 13



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EUROPEAN SEARCH REPORT

Application Number
EP 92 40 3423

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
D,X	US-A-4 846 585 (H.BOECKMANN; D.L.VAN ERDEN) * column 2, line 41 - column 3, line 48 *	1,7,12, 33	B65D33/25 B65D33/34
Y		13,23	
A		32	

Y	US-A-3 780 781 (T.URAMOTO) * column 5, line 3 - line 34 *	13	
A		14-17,19	

X	EP-A-0 457 617 (OSCAR MAYER FOODS CORP.) * column 3, line 14 - column 6, line 37 *	26,27, 29,30	
Y		23	
A		1-3,7, 12,20, 22,25,33	

X	EP-A-0 450 958 (OSCAR MAYER FOODS CORP.) * column 5, line 10 - column 6, line 10 * * column 7, line 6 - line 25 *	29,30	
A		1-3,7,8, 12,20, 22,33	TECHNICAL FIELDS SEARCHED (Int. Cl.5) B65D

A	EP-A-0 388 884 (ZIP-PAK INC.) * column 2, line 50 - column 3, line 14 *	2,4,32	

A	EP-A-0 371 402 (IDEMITSU PETROCHEMICAL CO. LTD.) * page 2, line 29 - line 39 * * page 3, line 30 - line 43 * * table 1 *	10,11	

A	EP-A-0 385 323 (ILLINOIS TOOL WORKS INC.) * column 4, line 32 - column 5, line 17 *	23,25-27	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	31 MARCH 1993	GOODALL C.J.

CATEGORY OF CITED DOCUMENTS

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